## **CLAIMS**

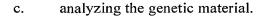
## What is claimed is:

- 5 1. A method of genetic analysis by:
  - a. upstream processing a tissue sample;
  - b. applying the processed sample on a matrix, including preserving means sorbed to the solid matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and
- c. analyzing the genetic material.
  - 2. The method as set forth in claim 1, wherein the analyzing step further includes phenotyping the processed tissue sample and cells therein.
- 15 3. The method as set forth in claim 1, wherein the matrix further comprises:
  - a. a weak base;
  - b. a chelating agent;
  - c. an anionic surfactant or detergent.
- 20 4. The method as set forth in claim 1, wherein the upstream processing step further includes dissociating the cells of the tissue sample.
  - 5. A kit for genetic analysis including:
- a. upstream processing means for processing a tissue sample; and
  - b. a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, for receiving a processed sample.
- 30 6. A method of genetic analysis, wherein the method comprises:
  - a. upstream processing of a biological sample;
  - b. applying the processed sample to a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and

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- 7. A method of genetic analysis, wherein the method comprises:
  - a. upstream processing of a biological sample to produce a suspension comprising cells comprising genetic material;
  - b. applying the suspension to a first solid medium;
  - c. contacting the cells on the first solid medium with a second solid medium comprising a matrix, including preserving means sorbed to the matrix for protecting the genetic material from degradation, to derive genetic material from the sample; and
  - d. analyzing the genetic material.
- 8. A method of isolating and analyzing genetic material, wherein the method comprises:
- a. obtaining a biological sample;
  - b. processing the biological sample to obtain one or more cells or virions comprising genetic materal;
  - c. applying the sample to a solid medium, wherein the solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:
  - i. a weak base;
    - ii. a chelating agent; and
    - iii. an anionic surfactant or detergent;
  - d. lysing the cell or virion and retaining the genetic material with the solid medium;
  - e. analyzing the genetic material.
  - 9. The method of claim 8, wherein
  - a. the biological sample comprises an organ, a tissue, or a multi-cellular organism or colony; and
    - b. the processing step b further comprises:
      - i. dissociating cells in the biological sample; and
      - ii. isolating the cells on a solid medium distinct from the solid medium of step c.

- 10. The method of claim 8, wherein the genetic material comprises DNA or RNA.
- 11. A method of detecting and analyzing genetic material from a biological sample, wherein the method comprises:
  - a. obtaining a biological sample comprising a cellular component having one or more cells comprising genetic material;
  - b. isolating the cellular component, on a first solid medium, from non-cellular components in the sample;
- c. contacting the cellular component with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:
  - i. a weak base;
  - ii. a chelating agent; and
  - iii. an anionic surfactant or detergent;
  - d. lysing the one or more cells in the cellular component and retaining the genetic material with the second solid medium; and
  - e. analyzing the genetic material.
- 12. The method of claim 11, wherein the biological sample comprises blood, plasma, serum, mucus, urine, saliva, sweat, or semen.
  - 13. The method of claim 11, wherein the biological sample comprises a culture, a fluid sample, water, a food, a beverage, or a non-biological solid.
  - 14. The method of claim 11, wherein the genetic material comprises DNA or RNA.
- 15. The method of claim 11, wherein the genetic material comprises genomic 30 DNA or mRNA.
  - 16. A method of isolating and analyzing genetic material from a biological sample from a mammal, wherein the method comprises:
    - a. obtaining a biological sample comprising an organ or a tissue comprising cells comprising genetic material;

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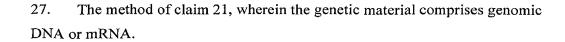
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- b. dissociating the cells to produce a suspension comprising the cells;
- c. isolating the cells on a first solid medium;
- d. contacting the cells on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:
  - i. a weak base;
  - ii. a chelating agent; and
  - iii. an anionic surfactant or detergent;
- d. lysing the cells and retaining the genetic material with the second solid medium;
- e. analyzing the genetic material.
- 17. The method of claim 16, wherein the genetic material comprises mammalian DNA or RNA.
- 18. The method of claim 16, wherein the genetic material comprises DNA or RNA from non-mammalian cells or from viruses.
- 19. A method of isolating and analyzing genetic material from a non-solid biological sample from a mammal, wherein the method comprises:
  - a. obtaining a non-solid biological sample comprising a component of interest, wherein the component contains a cell, a virus, or a combination thereof and wherein the cell or the virus comprises genetic material;
  - b. isolating the component of interest on a first solid medium;
- c. contacting the isolated component of interest on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:
  - i. a weak base;
  - ii. a chelating agent; and
  - iii. an anionic surfactant or detergent;
  - d. releasing the genetic material from the component of interest and retaining the genetic material with the second solid medium;
  - e. analyzing the genetic material.

- 20. The method of claim 19, wherein the genetic material comprises DNA or RNA.
- 21. A method of isolating and analyzing genetic material, wherein the method comprises:
  - a. obtaining a sample;
  - b. processing the sample to produce a suspension comprising cells or virions comprising genetic material;
  - c. isolating the cells or virions on a first solid medium;
- d. contacting the cells or virions on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:
  - i. a weak base;
  - ii. a chelating agent; and
  - iii. an anionic surfactant or detergent;
  - e. lysing the cells or virions and retaining the genetic material with the second solid medium; and
  - f. analyzing the genetic material.
- 20 22. The method of claim 21, wherein the sample comprises one of the following: an organism, an organ, a tissue, blood, plasma, serum, mucus, urine, saliva, sweat, or semen.
- 23. The method of claim 21, wherein the sample comprises a culture, a fluid sample, water, a food, a beverage, or a non-biological solid.
  - 24. The method of claim 21, wherein the analysis of genetic material includes genotyping.
- 30 25. The method of claim 21, further comprising:
  - g. detecting contamination of the sample.
  - 26. The method of claim 21, wherein the genetic material comprises DNA or RNA.

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- 28. A method of isolating and analyzing genetic material from cells or virions, wherein the method comprises:
  - a. providing a first solid medium comprising cells or virions comprising genetic material;
  - b. contacting the cells or virions on the first solid medium with a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:
    - i. a weak base;
    - ii. a chelating agent; and
    - iii. an anionic surfactant or detergent;
  - c. lysing the cells or virions and retaining the genetic material with the second solid medium; and
  - d. analyzing the genetic material.
  - 29. The method of claim 28, wherein the analysis of genetic material includes genotyping.
  - 30. The method of claim 28, further comprising:
    - e. detecting contamination of the first solid medium.
- 31. The method of claim 28, wherein the genetic material comprises DNA or 25 RNA.
  - 32. The method of claim 28, wherein the genetic material comprises genomic DNA or mRNA.
  - 33. A kit for isolating genetic material, wherein the kit comprises:
    - a. a first solid medium capable of retaining cells or virions;
    - b. a second solid medium, wherein the second solid medium comprises a matrix having a composition sorbed thereto, wherein the composition comprises:
      - i. a weak base;

- ii. a chelating agent; and
- iii. an anionic surfactant or detergent.
- 34. An apparatus for isolating genetic material, wherein the apparatus comprises:
- a. a chamber for containing a fluid including a suspension of cells therein, the chamber comprising:
  - i. an opening therethrough; and
  - ii. a first matrix removably disposed over the opening;
  - b. vacuum means for drawing the fluid from the chamber and through the first matrix and depositing the cells on the matrix;
  - c. a second matrix comprising preserving means for lysing cells and preserving genetic material sorbed to the matrix by protecting the genetic material from degradation.